

NON-PUBLIC?: N
ACCESSION #: 9008090160
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Duane Arnold Energy Center PAGE: 1 OF 4

DOCKET NUMBER: 05000331

TITLE: Loss of Essential Offsite Power Due to Personnel Error During
Performance of Switchyard Breaker Relay Testing.
EVENT DATE: 07/09/90 LER #: 90-007-00 REPORT DATE: 08/0 /90

OTHER FACILITIES INVOLVED: None DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Jeff Axline, Technical Support Engineer

TELEPHONE: (319) 851-7600

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On 7/9/90, at approximately 1033 hours, a loss of offsite power to essential buses 1A3 and 1A4 occurred when the Standby Transformer was inadvertently de-energized. At the time of the event, the plant was in cold shutdown with the vessel completely defueled to the fuel pool and the reactor cavity flooded. Essential power was being supplied by the Standby Transformer due to the Startup Transformer being out of service for maintenance. Several 'A' side safety systems were out of service for maintenance, including the 'A' Standby diesel generator (bus 1A3). Upon loss of power, the 'B' Standby diesel generator started and picked up loads on essential bus 1A4.

The cause of this event was determined to be a personnel error by a non-nuclear utility system protection technician who failed to block trip

signals during a breaker failure relay test. The task being performed was not covered by an approved procedure.

Corrective actions will be to proceduralize DAEC Switchyard tasks which have the potential to cause a loss of power or significant loss of load to the plant. In addition, a set of standard work practices for switchyard work has been developed to better control this work.

This event had no effect on the safe operation of the plant. The 'B' Standby diesel generator started immediately to power essential loads and offsite power was restored in 37 minutes.

END OF ABSTRACT

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I. DESCRIPTION OF EVENT:

On 7/9/90, at approximately 1033 hours, a loss of offsite power to essential buses 1A3 and 1A4 (EIS System Code EB) occurred when the Standby Transformer (EA-XFMR-1X003) was inadvertently de-energized. At the time of the event, the plant was in cold shutdown with the vessel, completely defueled to the fuel pool and the reactor cavity flooded. The Startup Transformer and its feeder breaker were out of service for maintenance with the essential buses being powered by the Standby Transformer (EA-XFMR-1X004) and non-essential being backfed through the main transformer (EA-XFMR-1X001). The 'B' side Fuel Pool Cooling System (EIS System Code DA) and Shutdown Cooling System (EIS System Code BO) were in service and the 'B' Standby Gas Treatment System (EIS System Code BH) was in service to ventilate the drywell. The 'A' trains of the following equipment/systems were out of service for maintenance, and not required to be operable: Standby Diesel Generator (SBDG), Residual Heat Removal (RHR), Emergency Service Water (ESW), Core Spray, and 125 VDC Batteries (Division I). In addition, the High Pressure Coolant Injection (HPCI), Reactor Core Isolation Cooling (RCIC), Condensate, Feedwater, and Reactor Water Cleanup (RWCU) systems were out of service for maintenance, and also not required to be operable.

The loss of essential power caused a full Reactor Protection System (RPS) (EIS System Code JC) initiation, including Group I-V Primary Containment Isolation System (PCIS) (EIS System Code JM) signals. No rods moved as all Hydraulic Control Units were tagged out. Various PCIS valves did not move as they were tagged out for maintenance (PCIS not required to be operable). In response to the loss of power, the 'B' SBDG started and energized its essential bus (1A4) as designed.

II. CAUSE OF EVENT

The intermediate cause for the loss of power to the Standby Transformer was tripping of the breaker which feeds it. The cause for the breaker trip was a personnel error by a non-nuclear utility system protection technician who failed to block trip signals during a breaker failure relay test. Although the technician understood the necessity of blocking the trip signals (he had done the first relay test successfully), a job specific procedure did not exist and therefore was not being followed to ensure that the steps were performed in the required order. This is considered to be a contributing factor to this event.

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III. ANALYSIS OF EVENT

This event had no effect on the safe operation of the plant. At the time essential offsite power was lost, the reactor was completely defueled to the fuel pool and the reactor cavity was flooded. In this condition, the main system required (for normal shutdown condition - not required by Technical Specifications) to be in service was fuel pool cooling. Although power was quickly restored to bus 1A4 by the 'B' SBDG, the associated fuel pool cooling train tripped, on the momentary loss of power, as designed. This train was returned to service within minutes of the trip to maintain adequate fuel pool cooling. The Standby Transformer and essential bus 1A3 were returned to service approximately 37 minutes after the event occurred. Loads were shifted from the 'B' SBDG to the Standby Transformer shortly thereafter. Although not required by Technical Specifications, it is standard DAEC policy to maintain at least one diesel operational with the vessel defueled.

If this event had occurred under different plant conditions, such as power operation, the Emergency Core Cooling System (ECCS) associated with essential bus 1A4 (being powered by the 'B' SBDG) would have provided adequate cooling to safely bring the plant to cold shutdown. (Note: work in the switchyard, such as the work being performed, would not normally be performed during plant conditions other than cold shutdown).

IV. CORRECTIVE ACTIONS

Several corrective actions, involving the control of work being performed in the DAEC switchyard, will be taken. A review of periodic maintenance/testing performed in the DAEC switchyard has been performed to determine which work has the potential to cause a loss of power or significant loss of load to the plant. Job specific work procedures will

be drafted for this maintenance/testing by August 31. Until the applicable procedures are in place, DAEC switchyard maintenance/testing will be limited to essential functions and will be performed by two system protection technicians to provide a double check of the work. In addition to the above corrective actions, a set of standard work practices has been developed for work performed in the DAEC switchyard.

V. ADDITIONAL INFORMATION

A review of DAEC event history indicated that no similar events have occurred where switchyard testing caused a total loss of offsite essential power.

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EIIS System Codes for systems out of service at time of event:

SYSTEM CODE

1. 'A' SBDG EK
2. 'A' RHR BO
3. 'A' ESW BI
4. 'A' Core Spray BM
5. 125 VDC Batt. (Div. I) EJ
6. HPCI BJ
7. RCIC BN
8. Condensate SD
9. Feedwater SJ
10. RWCU CE

This event is being reported pursuant to 10 CFR 50.73 (a)(2)(iv).

ATTACHMENT 1 TO 9008090160 PAGE 1 OF 1

Iowa Electric Light and Power Company

August 2, 1990
DAEC-90-0571

Mr. A. Bert Davis
Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License DPR-49
Licensee Event Report #90-007

Gentlemen:

In accordance with 10 CFR 50.73 please find attached a copy of the subject Licensee Event Report.

Very truly yours,

Rick L. Hannen
Plant Superintendent - Nuclear

RLH/JSA/ky

cc: Director of Nuclear Reactor Regulation
Document Control Desk
U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D. C. 20555

NRC Resident Inspector - DAEC

Dr. William R. Jacobs, Jr.
GDS Associates, Inc.
Suite 720
1850 Parkway Place
Marietta, GA 30068-8237

File A-118a

General Office P.O Box 351 Cedar Rapids Iowa 52406 319/398-4411

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